Claim Objections

Claims 6 and 7 have been amended to be product claims. It was agreed at the interview that this amendment would correct the objection.

Claim Rejections – 35 U.S.C. § 112

Claims 1, 2, 10, 11, 25-28 are rejected under 35 U.S.C. § 112 for not defining the Walther-MacCoull equation. Applicants have submitted ASTM D 341-03 in the enclosed IDS. It was agreed in the interview that ASTM D341-03 clearly defines the Walther-MacCoull equation. Since ASTM D341-03 is referenced in the specification (page 12, Paragraph [0029]) and is being documented in the IDS, the Examiner agreed to remove the rejection since a person skilled in the art would understand the Walther-MacCoull equation.

Claims 1, 2, 10, 11, 25-28 are rejected under 35 U.S.C. § 112 for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation in question has been changed to "... selected from the group consisting of Group I, Group II, Group II and Group V, and any combination thereof." Support for this amendment is found in Table 1 on page 33. It was agreed in the interview that this amendment satisfies the rejection.

Claim Rejections – 35 U.S.C. § 102

Claims 1-42 are rejected under 35 U.S.C. § 102 as being anticipated by Berlowitz. Applicants are amending claims 1, 2, 10, 11, 25-28. The new limitation requires "a ratio of measured-to-theoretical low-temperature viscosity less than 1.2, at a temperature of about -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation,". Support for this limitation is found on page 13, Paragraph [0031].

It was agreed in the interview, that Berlowitz does not directly disclose a ratio of measured-to-theoretical low-temperature viscosity less than 1.2. Examiner wanted additional time to consider if Berlowitz inherently discloses the ratio. Applicants maintain that the examples in Berlowitz would most likely have a higher measured-to-theoretical low-temperature viscosity. Furthermore, applicants maintain that even if the examples in Berlowitz has the same ratio, the disclosure is not an enabling disclosure of this limitation. Therefore, these claims should be allowed as well as all their dependant claims.

Claim 3, 4, 5, 12, 13 and 14 require the limitation of hydrodewaxing the liquid product whereas Berlowitz discloses a solvent dewaxing step. Since Berlowotiz does not disclose this limitation these claims and all their dependant claims should be allowed.

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AMENDMENTS TO THE CLAIMS

1. (Currently amended) A base stock or base oil comprising the properties of:

(a) a viscosity index (VI) of about 130 or greater,

(b) a pour point of about -10C or lower,

(c) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to about~~ less than 1.2~~-or less~~, at a temperature of about -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation,

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof.

2. (Currently amended) A base stock or base oil comprising the properties of:

(a) a viscosity index (VI) of about 130 or greater,

(b) a pour point of about -10C or lower,

(c) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to about~~ less than 1.2~~-or less~~, at a temperature of about -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation, and

(d) a percent Noack volatility no greater than that calculated by the formula

-6.882Ln(CCS@-35C) + 67.647,

where CCS@-35C is the base oil CCS viscosity in centipoise, tested at -35C, and that value as used in the equation is less than 5500 cP, and

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof.

3. (Original) A base stock or base oil with a VI of at least 130 produced by a process which comprises:

(1) hydrotreating a feedstock having a wax content of at least about 60 wt.%, based on feedstock, with a hydrotreating catalyst under effective hydrotreating conditions such that less than 5 wt.% of the feedstock is converted to 650oF (343oC) minus products to produce a hydrotreated feedstock whose VI increase is less than 4 greater than the VI of the feedstock;

(2) stripping the hydrotreated feedstock to separate gaseous from liquid product; and

(3) hydrodewaxing the liquid product with a dewaxing catalyst which is at least one of ZSM-48, ZSM-57, ZSM-23, ZSM-22, ZSM-35, ferrierite, ECR-42, ITQ-13, MCM-71, MCM-68, beta, fluorided alumina, silica-alumina or fluorided silica alumina under catalytically effective hydrodewaxing conditions wherein the dewaxing catalyst contains at least one Group 9 or Group 10 noble metal.

4. (Original) A base stock or base oil with a VI of at least 130 produced by a process which comprises:

(1) hydrotreating a feedstock having a wax content of at least about 50 wt.%, based on feedstock, with a hydrotreating catalyst under effective hydrotreating conditions such that less than 5 wt.% of the feedstock is converted to 650°F (343°C)

minus products to produce a hydrotreated feedstock to produce a hydrotreated feedstock whose VI increase is less than 4 greater than the VI of the feedstock;

(2) stripping the hydrotreated feedstock to separate gaseous from liquid product;

(3) hydrodewaxing the liquid product with a dewaxing catalyst which is at least one of ZSM-22, ZSM-23, ZSM-35, ferrierite, ZSM-48, ZSM-57, ECR-42, ITQ-13, MCM-68, MCM-71, beta, fluorided alumina, silica-alumina or fluorided silica-alumina under catalytically effective hydrodewaxing conditions wherein the dewaxing catalyst contains at least one Group 9 or 10 noble metal; and

(4) hydrofinishing the product from step (3) with a mesoporous hydrofinishing catalyst from the M41S family under hydrofinishing conditions.

5. (Original) A base stock or base oil with a VI of at least 130 produced by a process which comprises:

(1) hydrotreating a feedstock having a wax content of at least about 60 wt.%, based on feedstock, with a hydrotreating catalyst under effective hydrotreating conditions such that less than 5 wt.% of the feedstock is converted to 650°F (343°C) minus products to produce a hydrotreated feedstock to produce a hydrotreated feedstock whose VI increase is less than 4 greater than the VI of the feedstock;

(2) stripping the hydrotreated feedstock to separate gaseous from liquid product;

(3) hydrodewaxing the liquid product with a dewaxing catalyst which is ZSM-48 under catalytically effective hydrodewaxing conditions wherein the dewaxing catalyst contains at least one Group 9 or 10 noble metal; and

(4) Optionally, hydrofinishing the product from step (3) with MCM-41 under hydrofinishing conditions.

6. (Currently amended) The ~~process-~~product as in claim 3, 4, or 5 wherein said feedstock is a synthetic gas to liquid feedstock.

7. (Currently amended) The ~~process~~ product as in claims 3, 4, or 5 wherein said feedstock is made by a Fischer-Tropsch process.

8. (Original) A lubricant comprising the base stock or base oil of claims 1, 2, 3, 4 or 5.

9. (Original) A lubricant comprising the base stock or base oil of claims 1, 2, 3, 4 or 5. and at least one performance enhancing additive.

10. (Currently amended) A lubricant comprising a base stock or base oil, said base stock or base oil having the properties of:

(a) a viscosity index (VI) of about 130 or greater,

(b) a pour point of about -10C or lower,

(c) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to about~~ less than 1.2~~-or less~~, at a temperature of about -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation.

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof.

11. (Currently amended) A lubricant comprising a base stock or base oil, said base stock or base oil having the properties of:

(a) a viscosity index (VI) of about 130 or greater,

(b) a pour point of about -10C or lower,

(c) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to about~~ less than 1.2 ~~or less~~, at a temperature of about -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation, and

(d) a percent Noack volatility no greater than that calculated by the formula

-6.882Ln(CCS@-35C) + 67.647,

where CCS@-35C is the base oil CCS viscosity in centipoise, tested at -35C, and that value as used in the equation is less than 5500 cP, and

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof.

12. (Original) A lubricating comprising at least one base stock or base oil wherein said base stock or base oil has a VI of at least 130 produced by a process which comprises:

(1) hydrotreating a feedstock having a wax content of at least about 60 wt.%, based on feedstock, with a hydrotreating catalyst under effective hydrotreating conditions such that less than 5 wt.% of the feedstock is converted to 650oF (343oC) minus products to produce a hydrotreated feedstock whose VI increase is less than 4 greater than the VI of the feedstock;

(2) stripping the hydrotreated feedstock to separate gaseous from liquid product; and

(3) hydrodewaxing the liquid product with a dewaxing catalyst which is at least one of ZSM-48, ZSM-57, ZSM-23, ZSM-22, ZSM-35, ferrierite, ECR-42,

ITQ-13, MCM-71, MCM-68, beta, fluorided alumina, silica-alumina or fluorided silica alumina under catalytically effective hydrodewaxing conditions wherein the dewaxing catalyst contains at least one Group 9 or Group 10 noble metal.

13. (Original) A lubricant comprising at least one base stock or base oil wherein said base stock has a VI of at least 130 produced by a process which comprises:

(1) hydrotreating a lubricating oil feedstock having a wax content of at least about 50 wt.%, based on feedstock, with a hydrotreating catalyst under effective hydrotreating conditions such that less than 5 wt.% of the feedstock is converted to 650°F (343°C) minus products to produce a hydrotreated feedstock to produce a hydrotreated feedstock whose VI increase is less than 4 greater than the VI of the feedstock;

(2) stripping the hydrotreated feedstock to separate gaseous from liquid product;

(3) hydrodewaxing the liquid product with a dewaxing catalyst which is at least one of ZSM-22, ZSM-23, ZSM-35, ferrierite, ZSM-48, ZSM-57, ECR-42, ITQ-13, MCM-68, MCM-71, beta, fluorided alumina, silica-alumina or fluorided silica-alumina under catalytically effective hydrodewaxing conditions wherein the dewaxing catalyst contains at least one Group 9 or 10 noble metal; and

(4) hydrofinishing the product from step (3) with a mesoporous hydrofinishing catalyst from the M41S family under hydrofinishing conditions.

14. (Original) A lubricant comprising at least one base stock wherein said base stock has a VI of at least 130 produced by a process which comprises:

(1) hydrotreating a lubricating oil feedstock having a wax content of at least about 60 wt.%, based on feedstock, with a hydrotreating catalyst under effective hydrotreating conditions such that less than 5 wt.% of the feedstock is converted to 650°F (343°C) minus products to produce a hydrotreated feedstock to produce a

hydrotreated feedstock whose VI increase is less than 4 greater than the VI of the feedstock;

(2) stripping the hydrotreated feedstock to separate gaseous from liquid product;

(3) hydrodewaxing the liquid product with a dewaxing catalyst which is ZSM-48 under catalytically effective hydrodewaxing conditions wherein the dewaxing catalyst contains at least one Group 9 or 10 noble metal; and

(4) Optionally, hydrofinishing the product from step (3) with MCM-41 under hydrofinishing conditions.

15. (Original) The lubricant as in claim 12, 13 or 14 wherein said feedstock is a synthetic gas to liquid feedstock.

16. (Original) The lubricant as in claims 12, 13 or 14 wherein said feedstock is made by a Fischer-Tropsch process.

17. (Original) A lubricant composition comprising the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity is less than or equal to about 7000 at -25C and the Noack Volatitlity is less than or equal to about 15 wt%.

18. (Original) A lubricant composition comprising the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity is less than or equal to about 6600 at -30C and the Noack Volatitlity is less than or equal to about 15 wt%.

19. (Original) A lubricant composition comprising the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity is less than or equal to about 6200 at -35C and the Noack Volatitlity is less than or equal to about 15 wt%.

20. (Original) A lubricant composition comprising the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity is less than or equal to about 7000 at -25C and the Noack Volatitlity is less than or equal to about 13 wt%.

21. (Original) A lubricant composition comprising the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity is less than or equal to about 6600 at -30C and the Noack Volatitlity is less than or equal to about 13 wt%.

22. (Original) A lubricant composition comprising the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity is less than or equal to about 6200 at -35C and the Noack Volatitlity is less than or equal to about 13 wt%.

23. (Original) A viscosity modifier solution comprising a viscosity modifier blended into the base stock of base oil of any one of the claims 1, 2, 3, 4 or 5.

24. (Original) An additive concentrate comprising the base stock or base oil of any one of the claims 1, 2, 3, 4 or 5.

25. (Currently amended) The method of making a lubricant comprising ~~incorporating a base stock or base oil having the properties of~~

(a) obtaining a base stock or base oil having the properties of

~~(a)~~ (i) a viscosity index (VI) of 130 or greater,

~~(b)~~ (ii) a pour point of -10C or lower,

~~(c)~~ (iii) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to~~ less than 1.2 ~~or less~~, at a temperature of -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation.

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof;~~.~~

(b) blending the base stock or base oil to create the lubricant.

26. (Currently amended) The method of making a lubricant comprising ~~incorporating a base stock or base oil having the properties of~~

(a) obtaining a base stock or base oil having the properties of

~~(a)~~ (i) a viscosity index (VI) of 130 or greater,

~~(b)~~ (ii) a pour point of -10C or lower,

~~(c)~~ (iii) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to~~ less than 1.2 ~~or less~~, at a temperature of -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation, and

~~(d)~~ (iv) a percent Noack volatility no greater than that calculated by the formula

$$-6.882\mathrm{Ln}(\mathrm{CCS}@-35\mathrm{C}) + 67.647,$$

where CCS@-35C is the base oil CCS viscosity in centipoise, tested at -35C, and that value as used in the equation is less than 5500 cP, and

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof;~~.~~

(b) blending the base stock or base oil to create the lubricant.

27. (Currently amended) The method of making an additive concentrate ~~incorporating a base stock or base oil having the properties of~~

(a) obtaining a base stock or base oil having the properties of

~~(a)~~ (i) a viscosity index (VI) of 130 or greater,

~~(b)~~ (ii) a pour point of -10C or lower,

~~(c)~~ (iii) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to~~ less than 1.2 ~~or less~~, at a temperature of -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation, and

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof;~~.~~

(b) blending the base stock or base oil to create the lubricant.

28. (Currently amended) The method of making an additive concentrate comprising ~~incorporating a base stock or base oil having the properties of~~

(a) obtaining a base stock or base oil having the properties of

~~(a)~~ (i) a viscosity index (VI) of 130 or greater,

~~(b)~~ (ii) a pour point of -10C or lower,

~~(c)~~ (iii) a ratio of measured-to-theoretical low-temperature viscosity ~~equal to~~ less than 1.2 ~~or less~~, at a temperature of -30C or lower, where the measured viscosity is cold-crank simulator viscosity and where theoretical viscosity is calculated at the same temperature using the Walther-MacCoull equation, and

~~(d)~~ (iv) a percent Noack volatility no greater than that calculated by the formula

$$-6.882\mathrm{Ln}(\mathrm{CCS@}{-35C}) + 67.647,$$

where CCS@-35C is the base oil CCS viscosity in centipoise, tested at -35C, and that value as used in the equation is less than 5500 cP, and

wherein said base stock or base oil is ~~not a Group IV base stock or base oil~~ selected from the group consisting of Group I, Group II, Group III, and Group V, and any combination thereof:~~.~~

(b) blending the base stock or base oil to create the lubricant.

29. (Original) The method of making an additive concentrate comprising incorporating a base stock or base oil of any one of the claims 3, 4 or 5.

30. (Original) The method of making a lubricant comprising incorporating said additive concentrate of either claim 27 or 28.

31. (Original) The method of making a lubricant comprising incorporating an additive concentrate comprising incorporating a base stock or base oil of any one of the claims 3, 4 or 5.

32. (Original) A method of improving the CCS viscosity of a base stock comprising incorporating said base stock or base oil of any one of the claims 1, 2, 3, 4 or 5.

33. (Original) A method of improving the CCS viscosity of a lubricant comprising incorporating a base stock or base oil of any one of the claims 1, 2, 3, 4 or 5.

34. (Original) A method of reducing the Noack volatility of a base stock comprising incorporating a base stock or base oil of any one of the claims 1, 2, 3, 4 or 5.

35. (Original) A method of reducing the Noack volatility of a lubricant comprising incorporating a base stock or base oil of any one of the claims 1, 2, 3, 4 or 5.

36. (Original) A method of improving a lubricant by admixing the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity of the final mixture is less than or equal to about 7000 at -25C and the Noack Volatility is less than or equal to about 15 wt%.

37. (Original) A method of improving a lubricant by admixing the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity of the final mixture is less than or equal to about 6600 at -30C and the Noack Volatility is less than or equal to about 15 wt%.

38. (Original) A method of improving a lubricant by admixing the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity of

the final mixture is less than or equal to about 6200 at -35C and the Noack Volatility is less than or equal to about 15 wt%.

39. (Original) A method of improving a lubricant by admixing the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity of the final mixture is less than or equal to about 7000 at -25C and the Noack Volatility is less than or equal to about 13 wt%.

40. (Original) A method of improving a lubricant by admixing the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity of the final mixture is less than or equal to about 6600 at -30C and the Noack Volatitlity is less than or equal to about 13 wt%.

41. (Original) A method of improving a lubricant by admixing the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5, wherein the CCS viscosity of the final mixture is less than or equal to about 6200 at -35C and the Noack Volatitlity is less than or equal to about 13 wt%.

42. (Original) A method of reducing the viscosity of a viscosity modifier solution by dispersing said solution in the base oil or base stock of any one of the claims 1, 2, 3, 4 or 5.

43. (New) The lubricant of claims 1, 2, 10 and 11 wherein the ratio of measured-to-theoretical low-temperature viscosity is less than 1.16.

44. (New) The lubricant of claims 1, 2, 10 and 11 where the ratio of measured-to-theoretical low-temperature viscosity is less than 1.12.